

Combustion Modeling

Completed Technology Project (2016 - 2021)



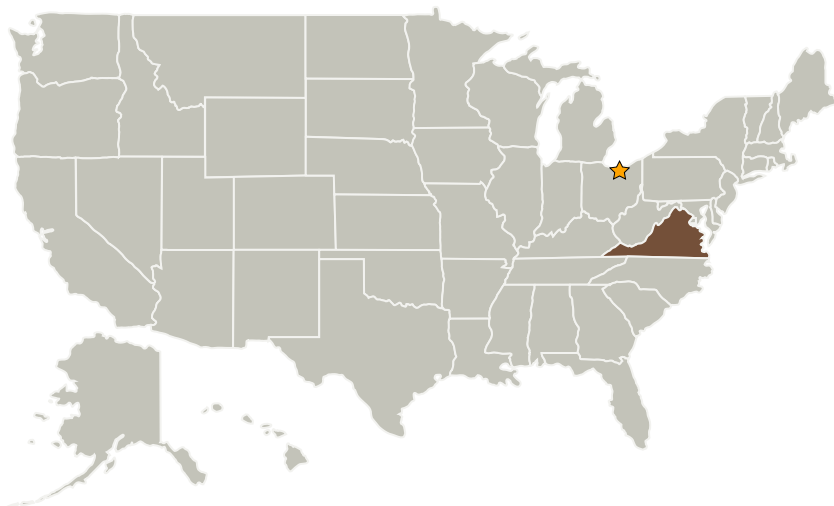
Project Introduction

The Combustion Modeling Technical Challenge develops new computational models that more accurately predict detailed chemical reactions associated with jet fuel combustion. These new models will lead to the design of more fuel-efficient jet engines and allow the relative merits of different alternative fuels to be assessed. Near-term goals include the accurate prediction of lean flame blowout and soot emissions as a function of changes in fuel composition.

Anticipated Benefits

Improved models of chemically reacting flows found in jet engines including advances in chemistry, spray, and turbulent combustion models will enable engine designs offering improved fuel efficiency and reduced NOx emissions. Advances in model accuracy and understanding of combustion processes will accelerate certification and use of promising alternative fuels, in collaboration with the National Jet Fuels Combustion Program (NJFCP).

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Aeronautics Research Mission Directorate (ARMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Transformative Aeronautics Concepts Program

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Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Air Force Research Laboratory(AFRL)	Supporting Organization	US Government	Notre Dame, Indiana
Arizona State University-Tempe(ASU)	Supporting Organization	Academia Alaska Native and Native Hawaiian Serving Institutions (ANNH)	Tempe, Arizona
Stanford University(Stanford)	Supporting Organization	Academia	Stanford, California
University of Connecticut	Supporting Organization	Academia Asian American Native American Pacific Islander (AANAPISI)	Storrs, Connecticut
University of Michigan-Ann Arbor	Supporting Organization	Academia	Ann Arbor, Michigan

Primary U.S. Work Locations

Virginia

Project Website:

<https://www.nasa.gov/aeroresearch/programs/tacp/ttt>

Project Management

Program Director:

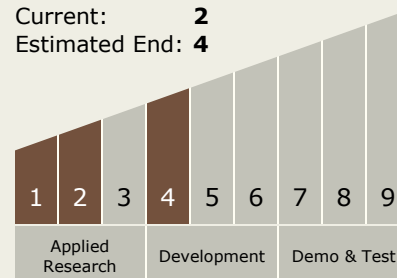
John A Cavolowsky

Project Manager:

Michael M Rogers

Technology Maturity (TRL)

Start: **1**
 Current: **2**
 Estimated End: **4**



Technology Areas

Primary:

- TX01 Propulsion Systems
 - TX01.3 Aero Propulsion
 - TX01.3.12 Alternative Low Carbon Jet Fuel

Other/Cross-cutting:

- TX15 Flight Vehicle Systems
 - TX15.1 Aerosciences
 - TX15.1.5 Propulsion Flowpath and Interactions

Target Destination

Foundational Knowledge